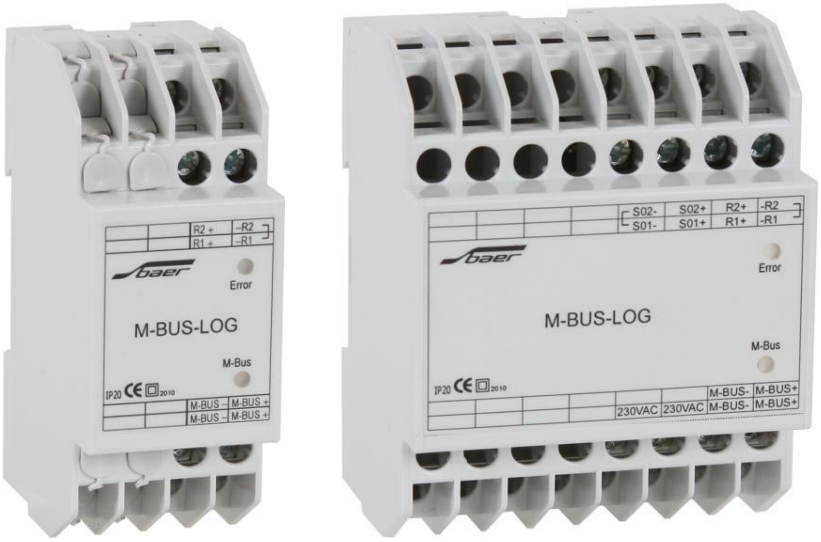
M-Bus-Logger

Data Logger

User Manual | Doc.-No.: E102312514074



Bär Industrie-Elektronik GmbH
Rathsbergstr. 23
D-90411 Nürnberg

Phone: +49 (0)911 970590
Fax: +49 (0)911 9705950
Internet: www.baer-gmbh.com

COPYRIGHT

Copyright © 2014 BÄR Industrie-Elektronik GmbH.

All rights, including those originating from translation, (re)-printing and copying of this document or parts thereof are reserved. No part of this manual may be copied or distributed by electronic, mechanic, photographic or indeed any other means without prior written consent of BÄR Industrie-Elektronik GmbH. All names of products or companies contained in this document may be trademarks or trade names of their respective owners.

Note

Based on its policies, BÄR Industrie-Elektronik GmbH develops and improves their products on an ongoing basis. In consequence, BÄR Industrie-Elektronik GmbH preserve the right to modify and improve the software and hardware products described in this document. Specifications and other information contained in this document can change without prior notice. This document does not cover all functions in all possible detail or variations that may be encountered during installation, maintenance and usage of the software.

Under no circumstances whatsoever will BÄR Industrie-Elektronik GmbH accept any liability for mistakes in this document or for any sub sequential damage arising from installation or usage of the software.

BÄR Industrie-Elektronik GmbH preserves the right to modify or withdraw this document at any time without prior announcement.

BÄR Industrie-Elektronik GmbH does not accept any responsibility or liability for the installation, usage, maintenance or support of third party products.

Printed in Germany

Table of Contents

1 General 4
1.1 M-Bus 4
1.2 M-Bus Structure 4
1.3 Communication 5
2 M-Bus-Logger 6
2.1 Pulse inputs 7
2.2 LED-Displays 8
2.3 Parameterization 8
2.4 Data Storage 9
3 Technical Data 10
3.1 Dimensions 11

1 General

1.1 M-Bus

The M-Bus system is a data transmission system for acquiring, evaluating, optimizing and controlling energy and process data. Modular components permit networking of a large number of different energy meters and computer-controlled terminals. The high degree of noise immunity, even in noisy environments, ensures reliably and error-free measured value transmission. Via modem interfaces, it is also possible to cover large distances to connect modular expansions or complex substation systems. The M-Bus system is the system preferred by operators supplying numerous consumers (e.g. industry and technology parks, trade fairs, building managements, etc.).

1.2 M-Bus Structure

An M-Bus system consists of user specifically configurable and task specific system components and different repeaters that are grouped together in one or more segments via a simple twisted-pair cable. The structure of an M-Bus segment can be designed as a:

- Star structure
- Linear structure
- Tree structure

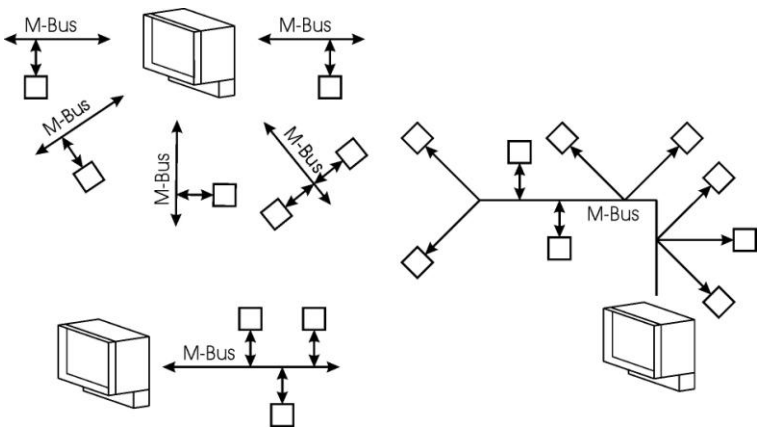


Figure 1, M-Bus segment

Each segment is terminated with a repeater and connects up to 250 terminals. Repeaters can be cascaded, i.e. segments can brunch to lower level segments.

The control centre of an M-Bus system is formed by the M-Bus master. It consists of an M-Bus repeater connected to a normal commercially available PC.

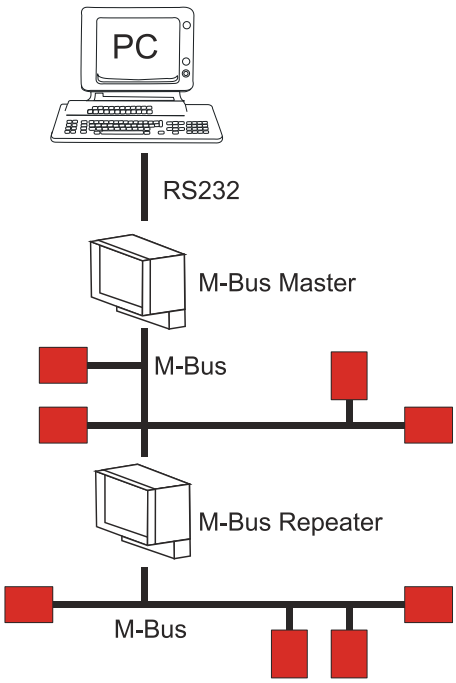


Figure 2, M-Bus structure

1.3 Communication

Data transfer at the M-Bus is executed serial as Master-Slave operation via M-Bus master or mini master with RS232 interface to PC:

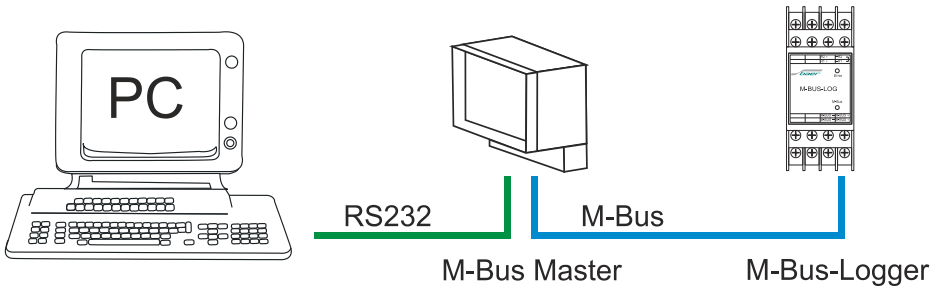


Figure 3, Communication

A two-wire standard telephone cable (e.g. JYStY N*2*0.8 mm or better) is used as the transmission line for the M-Bus.

2 M-Bus-Logger

The **M-Bus-Logger** has a modular design in top-hat rail installation. The following options are available (changeable vie parameterization software):

- **Load profile:** 4000 values (ca. 40 day with 15 min. registration period)
- **Billing data:** for 16 resets (e.g.: 16 month-values)

For both option the date will be saved by 8 digits with time stamp;

Programming and data retrieval by M-Bus (according to DIN EN 1434-3);

The following device types are possible:

- Reed-Inputs: without supply voltage, includes internal Lithium-Battery
- S0-Inputs, Option 1: with supply voltage 15VDC - 24VDC
- S0-Inputs, Option 2: with supply voltage 230VAC or 115VDC

Reed-Inputs and Option 1:

Option 2:

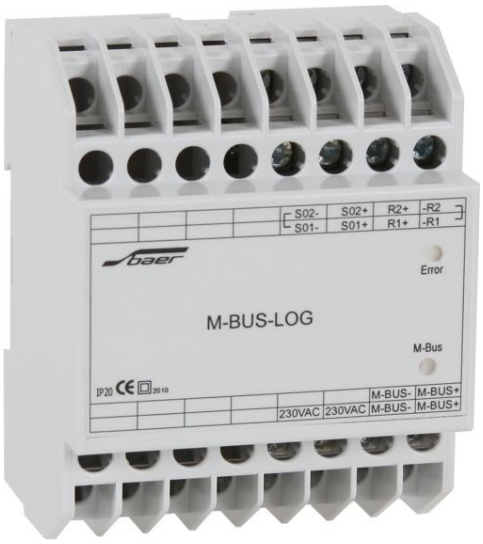


Figure 4, Device type

➢ This description includes all types of the device.

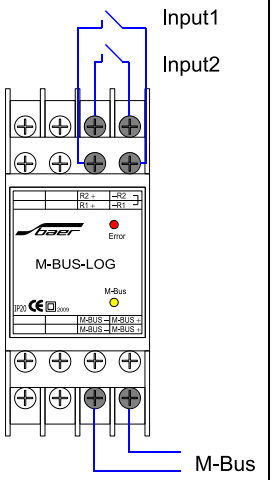
2.1 Pulse inputs

The following pulses are available:

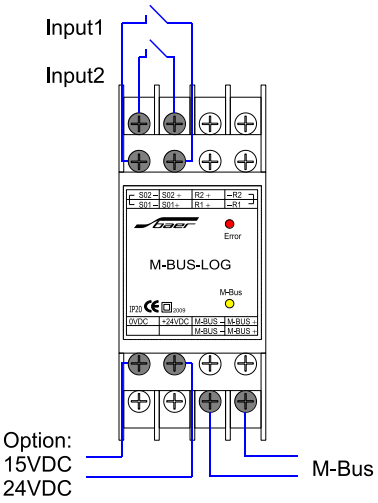
- Potential-free reed pulse, voltage 2,6 to 3,6V (via M-Bus), standard
- S0 pulse according to DIN 43864 (only with AC or DC supply voltage), optional

The register overflow happens from 2 147 483 647 (conforms to 7FFFFFFF hexadecimal) to 0.

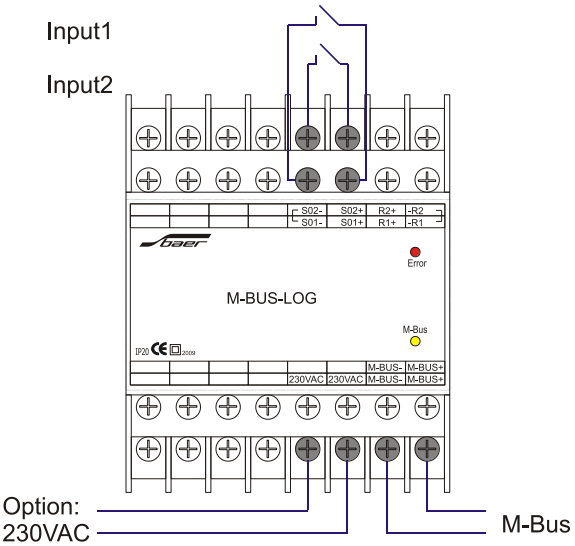
Reed-Inputs (without supply voltage)



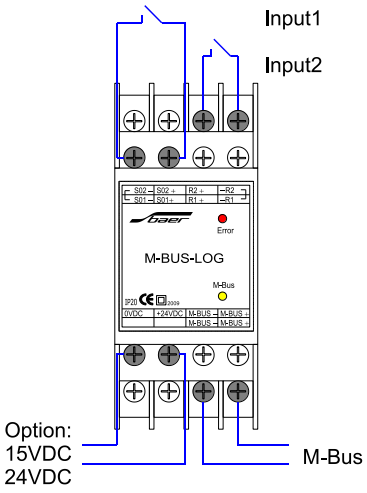
S0-Inputs Option 1: 15VDC - 24VDC



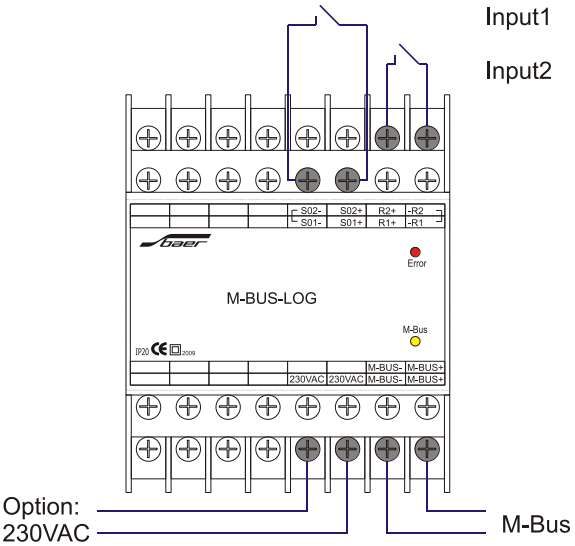
S0-Inputs Option 2: 230VAC or 115VAC



Mix (Option 1)



Mix (Option 2)



2.2 LED-Displays

The functions of the M-Bus-Logger are displayed by two LED's:

LED	Function	Description
● M-Bus (yellow)	Dimly lit	M-Bus on-line
	Blinking light	Data communication via M-Bus
● Error (red)	Permanent light	Permanent error: Data error in the measurement memory (EEPROM) Action: The M-Bus-Logger must be sent to the manufacturer for service
	Flash	Measuring period: at the begin of new measuring period (e.g. every 15 min.) the Error-LED flashes for one second.

2.3 Parameterization

The device can be programmed via the die M-Bus interface (according to DIN EN 1434-3) with the software MBusLogSet. It provides following functions:

- Set date, clock, baud rate, device address, register value, etc.
- Read configuration
- Read data

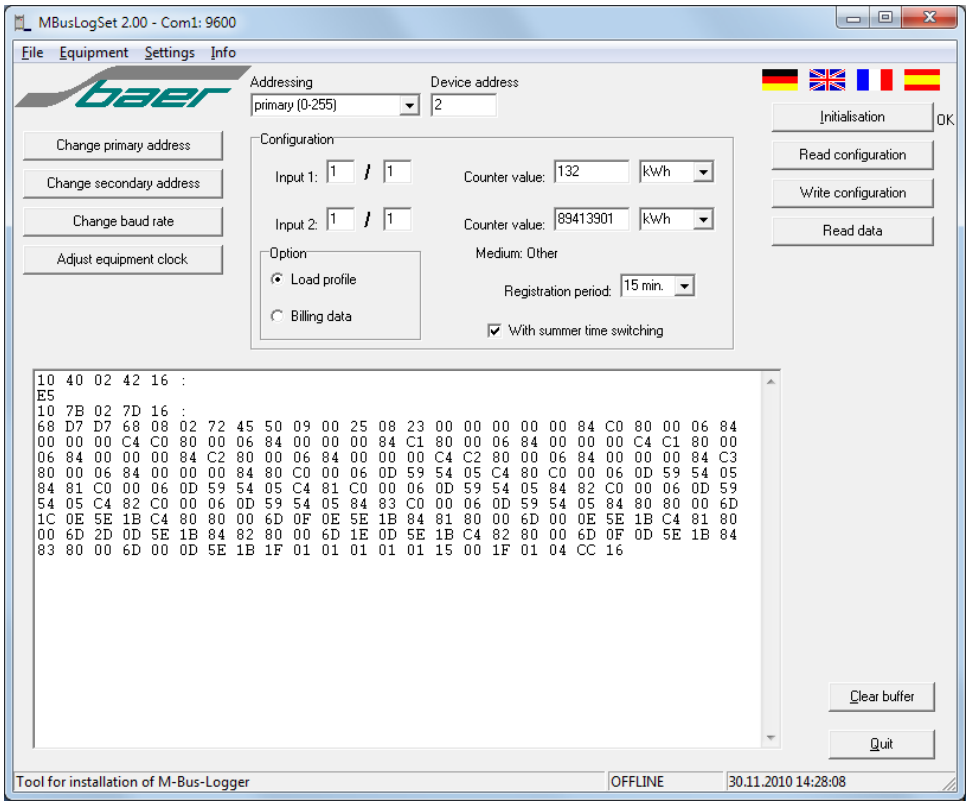

MBusLogSet 2.00 - Com1: 9600
File Equipment Settings Info
Addressing
primary (0-255)
Device address
2
Initialisation
OK
Read configuration
Write configuration
Read data
Change primary address
Change secondary address
Change baud rate
Adjust equipment clock
Configuration
Input 1: 1 / 1
Counter value: 132 kWh
Input 2: 1 / 1
Counter value: 89413901 kWh
Option
Load profile
Billing data
Medium: Other
Registration period: 15 min.
With summer time switching
10 40 02 42 16 :
E5
10 7B 02 7D 16 :
68 D7 D7 68 08 02 72 45 50 09 00 25 08 23 00 00 00 00 00 84 C0 80 00 06 84
00 00 00 C4 C0 80 00 06 84 00 00 00 84 C1 80 00 06 84 00 00 00 C4 C1 80 00
06 84 00 00 00 84 C2 80 00 06 84 00 00 00 C4 C2 80 00 06 84 00 00 00 84 C3
80 00 06 84 00 00 00 84 80 C0 00 06 0D 59 54 05 C4 80 C0 00 06 0D 59 54 05
84 81 C0 00 06 0D 59 54 05 C4 81 C0 00 06 0D 59 54 05 84 82 C0 00 06 0D 59
54 05 C4 82 C0 00 06 0D 59 54 05 84 83 C0 00 06 0D 59 54 05 84 80 80 00 6D
1C 0E 5E 1B C4 80 80 00 6D 0F 0E 5E 1B 84 81 80 00 6D 00 0E 5E 1B C4 81 80
00 6D 2D 0D 5E 1B 84 82 80 00 6D 1E 0D 5E 1B C4 82 80 00 6D 0F 0D 5E 1B 84
83 80 00 6D 00 0D 5E 1B 1F 01 01 01 01 01 15 00 1F 01 04 CC 16
Clear buffer
Quit
Tool for installation of M-Bus-Logger
OFFLINE
30.11.2010 14:28:08

Figure 5, Parameterization program MBusLogSet

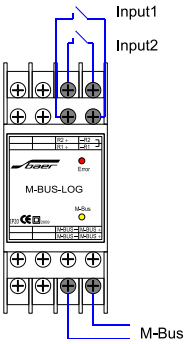
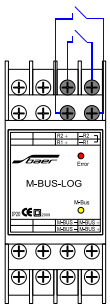
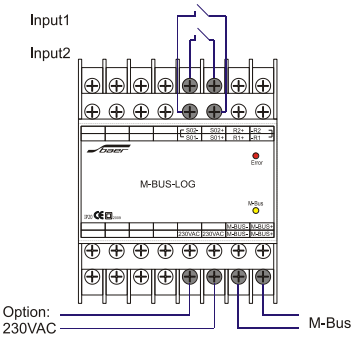
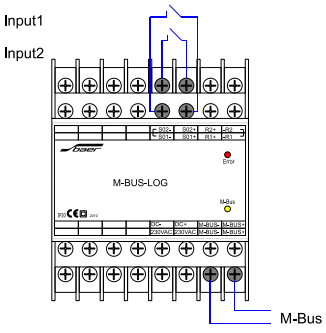
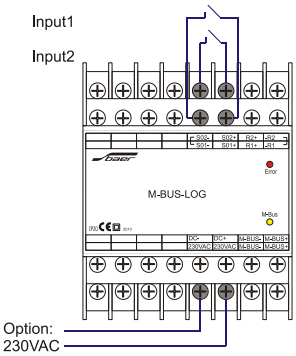
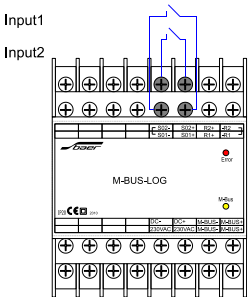
Factory settings for M-Bus-Logger (if not differently ordered):

- Baud rate: 2400 Baud (8E1)
- Primary address: 0
- Secondary address: serial number (8 digits)
- Option (for data storage): load profile, registration period 15 minutes

2.4 Data Storage

Bus-Logger consists following components (needed for internal registration memory):

- Internal Lithium-Battery
- M-Bus voltage (active ca. 36VDC)
  Note: For option 1 with supply voltage (15VDC to 24VDC) is for recording of load profile the M-Bus voltage needed!
- Optionally supply voltage

Reed-Inputs with M-Bus active  Pulse logging (Reed): yes Load profile with time stamp: yes	Reed-Inputs without M-Bus  Pulse logging (Reed): yes Load profile with time stamp: no	S0-Inputs with supply voltage with M-Bus active  Pulse logging (S0): yes Pulse logging (Reed): yes Load profile with time stamp: yes
S0-Inputs without supply voltage with M-Bus active  Pulse logging (S0): no Pulse logging (Reed): yes Load profile with time stamp: yes	S0-Inputs with supply voltage without M-Bus  Pulse logging (S0): yes Pulse logging (Reed): yes Load profile with time stamp: yes	S0-Inputs without supply voltage without M-Bus  Pulse logging (S0): no Pulse logging (Reed): yes Load profile with time stamp: no

3 Technical Data

Housing:	top-hat rail installation
Degree of protection:	IP20
Dimensions:	W = 35+1 mm (Option 1) or 70+2 mm (Option 2) H = 90 mm D = 58 mm
Protection class:	2
Auxiliary power (M-Bus):	max. 3mA via M-Bus (:= 2 M-Bus standard load)
Battery: (necessary for load profile)	Type: Lithium 3,6V Lifespan: ca. 8 years without M-Bus connection
Supply voltage: optional (possible for S0 pulses only)	None: Reed-Inputs only Option 1: 15VDC to 24VDC (S0 and Reed) Option 2: 230VAC (S0 and Reed) or 115VAC
Interface:	M-Bus passive (according to DIN EN 1434-3)
Baud rate:	300, 2400 (default), 9600 or 19200 Baud 8E1
Software interface:	According to IEC 60870-5 primary or secondary addresses
Pulse inputs:	No.: 2 Type: Reed (all versions) or S0 (Option 1 or 2 only) Pulse frequency: max.12Hz, pulse length 40ms minimum Option: 150Hz (pulse length 0,05ms / break 5ms)
Pulse input reed:	Potential-free, min. 1MΩ isolation Capacity: < 2nF (incl. cable) Resistor: open > 1 MΩ close < 2kΩ Voltage: 2,6 to 3,6V Currency: ca. 11µA
Pulse input S0 (Option):	According to DIN 43864
Adjustment:	1..255 / 1..255
Measuring period :	1min to 24hours
Real time clock:	max. deviation 30 sec/month at 25°C (10ppm)
Data storage:	Load profile: max. 4000 values Billing data: max. 16 resets
LED:	2 LED‘s for: Error and M-Bus
Extent of delivery:	- M-Bus-Logger with 2 Reed-Inputs
Optional:	- Power supply for AC or DC - 2 pulse inputs for S0 pulses
Order-Number:	11913: 2 Reed-Inputs, without supply voltage 12405: 2 S0-Inputs, supply voltage 15VDC to 24VDC 11792: 2 S0-Inputs, supply voltage 115VAC 11821: 2 S0-Inputs, supply voltage 230VAC
Accessories:	- M-Bus Master / Repeater / Mini Master - Cable - Software MBusLogSet - AMR-Software (e.g. SIGLON)

3.1 Dimensions